WHAT IS CLAIMED IS:

1. An aberration correcting unit for correcting an aberration caused in an optical path of an optical system which irradiates a light beam onto a recording medium and guides reflection light reflected by said recording medium, comprising:

a liquid crystal element having electrode layers which are opposed to each other and a liquid crystal sandwiched between said electrode layers, said liquid crystal element having a predetermined orientation direction and providing a light passing therethrough with a phase change by applying a voltage across said electrode layers; and

a polarization-direction changing element arranged in an optical path between a light source of said light beam and said liquid crystal element to change a polarization direction of said light beam.

2. A unit according to claim 1, wherein said polarization-direction changing element changes the polarization direction of said light beam so as to be substantially identical to said predetermined orientation direction.

3. A unit according to claim 1, wherein said polarization-direction changing element includes a ferrodielectric substance and the polarization direction of said light beam is changed in accordance with a change in voltage

applied to said ferrodielectric substance.

4. A unit according to claim 2, wherein said polarization-direction changing element includes a ferrodielectric substance and the polarization direction of said light beam is changed in accordance with a change in voltage applied to said ferrodielectric substance.

5. A unit according to any one of claims 1 through 4, wherein at least one of said electrode layers which are opposed to each other is divided so as to correct the aberration of the light beam having a polarization direction substantially identical to said predetermined orientation direction.

6. An aberration correcting unit for correcting an aberration caused in an optical path of an optical system which irradiates a light beam onto a recording medium and guides reflection light reflected by said recording medium, comprising:

a liquid crystal element having electrode layers which are opposed to each other and a liquid crystal sandwiched between said electrode layers, said liquid crystal element having a predetermined orientation direction and providing a light passing therethrough with a phase change by applying a voltage across said electrode layers;

a polarization-direction changing element arranged in an optical path between a light source of said light beam and said

liquid crystal element to change a polarization direction of said light beam; and

a controller for controlling said polarization-direction changing element to change the polarization direction of said light beam at a predetermined timing.

7. A unit according to claim 6, wherein said recording medium has a plurality of recording layers and said predetermined timing is a timing of changing the recording layers on which said light beam is irradiated.

8. A unit according to claim 6, wherein said polarization-direction changing element changes the polarization direction of said light beam so as to be substantially identical to said predetermined orientation direction.

9. A unit according to claim 7, wherein said polarization-direction changing element changes the polarization direction of said light beam so as to be substantially identical to said predetermined orientation direction.

10. A unit according to any one of claims 6 through 9, wherein said polarization-direction changing element includes a ferrodielectric substance and the polarization direction of said light beam is changed in accordance with a change in voltage

applied to said ferrodielectric substance.

11. A unit according to any one of claims 6 through 9, wherein at least one of said electrode layers which are opposed to each other is divided so as to correct the aberration of the light beam having a polarization direction that is substantially identical to said predetermined orientation direction.

12. A unit according to any one of claim 10, wherein at least one of said electrode layers which are opposed to each other is divided so as to correct the aberration of the light beam having a polarization direction substantially identical to said predetermined orientation direction.

13. An optical pickup apparatus having the aberration correcting unit according to any one of claims 1 through 4, comprising:

a light source for emitting said light beam; and

a photodetector for detecting the light beam which has been reflected by said recording medium and passed through said aberration correcting unit.

14. An optical pickup apparatus having the aberration correcting unit according to any one of claims 6 through 9, comprising:

a light source for emitting said light beam; and

a photodetector for detecting the light beam which has

been reflected by said recording medium and passed through said aberration correcting unit.

15. An optical pickup apparatus having the aberration correcting unit according to claim 11, comprising:

voltage applying means for applying a different voltage to each of the divisional electrodes.

16. A recording/reproducing apparatus which has the optical pickup apparatus according to claim 13 and reads recorded information from a recording medium having a plurality of recording layers to perform reproduction, comprising:

inter-layer jumping means for performing an inter-layer jump to change an irradiation of the light beam from one recording layer to another recording layer; and

a controller for controlling said polarization-direction changing element to change the polarization direction of said light beam at the time of performing said inter-layer jump.

17. A recording/reproducing apparatus which has the optical pickup apparatus according to claim 14 and reads recorded information from a recording medium having a plurality of recording layers to perform reproduction, comprising:

inter-layer jumping means for performing an inter-layer jump to change an irradiation of the light beam from one recording layer to another recording layer; and

a controller for controlling said polarization-direction

changing element to change the polarization direction of said light beam at the time of performing said inter-layer jump.

18. An aberration correcting unit for correcting an aberration caused in an optical path of an optical system which irradiates a light beam onto a recording medium and guides reflection light reflected by said recording medium, comprising:

a first liquid crystal element having first electrode layers which are opposed to each other and a liquid crystal sandwiched between said first electrode layers, said first liquid crystal element having a first predetermined orientation direction and providing a light passing therethrough with a phase change by applying a voltage across said first electrode layers;

a second liquid crystal element having second electrode layers which are opposed to each other and a liquid crystal sandwiched between said second electrode layers, said second liquid crystal element having a second predetermined orientation direction that is substantially perpendicularly to said first orientation direction and providing a light passing therethrough with a phase change by applying a voltage across said second electrode layers; and

a polarization-direction changing element arranged in the optical path between a light source of said light beam and said first and second liquid crystal elements to change a polarization direction of said light beam.

19. A unit according to claim 18, wherein said first liquid crystal element provides a light passing therethrough with a phase change for correcting a first aberration caused due to the reflection of the light from said recording medium, and said second liquid crystal element provides a light passing therethrough with a phase change for correcting a second aberration different from said first aberration.

20. A unit according to claim 18, wherein said polarization-direction changing element changes the polarization direction of said light beam so as to be substantially identical to one of said first and second orientation directions.

21. A unit according to claim 19, wherein said polarization-direction changing element changes the polarization direction of said light beam so as to be substantially identical to one of said first and second orientation directions.

22. A unit according to any one of claims 18 through 21, wherein said polarization-direction changing element includes a ferrodielectric substance, and the polarization direction of said light beam is changed in accordance with a change in voltage applied to said ferrodielectric substance.

23. A unit according to claim 19, wherein at least one layer of said first electrode layers which are opposed to each other is divided so as to correct said first aberration, and at least one layer of said second electrode layers which are opposed to each other is divided so as to correct said second aberration.

24. A unit according to any one of claims 18 through 21, wherein said recording medium has a plurality of recording layers, and said first and second liquid crystal elements produce phase changes in the light passing therethrough for correcting a first aberration caused by one of said plurality of recording layers and a second aberration caused by another recording layer.

25. An optical pickup apparatus having the aberration correcting unit according to any one of claims 18 through 21, comprising:

a light source for emitting said light beam; and

a photodetector for detecting the light beam reflected by said recording medium and passes through in said aberration correcting unit.

26. An optical pickup apparatus having the aberration correcting unit according to claim 22, comprising:

a light source for emitting said light beam; and

a photodetector for detecting the light beam reflected by said recording medium and passes through in said aberration

correcting unit.

27. An optical pickup apparatus having the aberration correcting unit according to claim 23, having

voltage applying means for applying a different voltage to each of the divisional electrodes of said first electrode layers which are opposed to each other and each of the divisional electrodes of said second electrode layers which are opposed to each other.

28. A recording/reproducing apparatus which has the optical pickup apparatus according to claim 25 and records and/or reproduces information to/from a recording medium having a plurality of recording layers, comprising:

instructing means for generating an inter-layer jump command for changing a recording layer to which the light beam is irradiated from one recording layer to another recording layer on the basis of a read signal from said recording medium;

inter-layer jumping means for performing said inter-layer jump in response to said inter-layer jump command; and

a controller for controlling said polarization-direction changing element to change the polarization direction of said light beam at the time of performing said inter-layer jump.

29. A recording/reproducing apparatus which has the optical pickup apparatus according to claim 26 and records and/or reproduces information to/from a recording medium having a

plurality of recording layers, comprising:

instructing means for generating an inter-layer jump command for changing a recording layer to which the light beam is irradiated from one recording layer to another recording layer on the basis of a read signal from said recording medium;

inter-layer jumping means for performing said inter-layer jump in response to said inter-layer jump command; and

a controller for controlling said polarization-direction changing element to change the polarization direction of said light beam at the time of performing said inter-layer jump.

30. An apparatus according to claim 28, wherein said controller controls said polarization-direction changing element to change the polarization direction of said light beam to the direction that is substantially perpendicularly to the polarization direction before said inter-layer jump is performed.

31. An apparatus according to claim 30, wherein said controller, in response to said inter-layer jump command, stops a supply of the voltage applied to the liquid crystal element having an orientation direction that is substantially identical to the polarization direction of said light beam before said inter-layer jump is performed and applies a voltage to the other liquid crystal element.